

JUST ANOTHER HEADQUARTERS OR THE MISSING LINK TO THEATER AIR DEFENSE?

**A MONOGRAPH
BY
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by MAJ Daniel P. Sauter III, USA, 53 pages.

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The monograph begins by examining the future environment in which theater air defense operations will occur. The Army's Force XXI operational concepts establish the foundation for future air defense operations. The future air threat and counterair doctrine are also discussed.

Two alternative organizations are then explained. The alternative organizations are the new AAMDC organization and its immediate predecessor, the echelon above corps Air Defense Artillery brigade. Next, evaluation criteria are established. The criteria are command and control, planning, coordination, and acceptability. The analysis is the preponderance of the work. Finally, the monograph concludes that the AAMDC is for effective theater Army air and missile defense operations.

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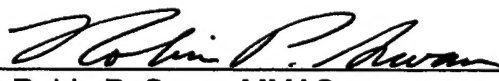
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INTRODUCTION

In the early 1990s, the United States Armed Forces significantly reduced force structure. During this downsizing, the Army inactivated its only theater-level air defense command and control headquarters, 32nd Army Air Defense Command (AADCOM). The 32nd AADCOM had served as the theater-level air defense headquarters for the NATO Central Region from 1957 to 1995.¹ The United States Army Air Defense Artillery Center recognized the void created by the inactivation of the 32nd AADCOM, and requested approval to activate a new theater-level air defense organization. The 32nd Army Air and Missile Defense Command (AAMDC) was activated at Fort Bliss, Texas on 19 October 1998.² Why was the AAMDC necessary?

Based on the overwhelming success of Army ADA in the recent Persian Gulf War, many argued that the AAMDC was not necessary. ADA had successfully protected United States forces and critical assets throughout the entire Southwest Asia theater. The Army ADA had accomplished its mission with an echelon-above corps (EAC) ADA brigade serving as the Army's theater ADA headquarters. The Army had employed a multi-echelon air defense structure covering the entire depth of the theater. Short-range air defense (SHORAD) units protected forward-deployed assets, and Patriots protected critical theater assets in the rear. Army air defenses were nearly flawless. The only US casualties inflicted by Iraqi aerial attacks occurred when a Patriot missile intercepted a SCUD, but failed to destroy the warhead of the missile. The warhead struck a barracks housing U.S. soldiers, killing twenty-eight soldiers and wounding over one hundred

more.³ This unfortunate incident resulted from a deficiency in the capabilities of the Patriot system, not ADA force structure.

The purpose of this paper is determine whether the Army Air and Missile Defense Command is required for theater air and missile defense operations in a Force XXI environment. To answer the question this paper analyzes the effectiveness of the echelon-above-corps (EAC) ADA brigade and the Army Air and Missile Defense Command organizations in performing the Army's theater air and missile defense functional responsibilities.

This study first establishes the environment in which these organizations will operate. Force XXI operational concepts, the Force XXI air threat, and joint counterair doctrine provide the foundations of this environment. Force XXI operational concepts of provide the Army's a vision for Force XXI organizational structure. The Force XXI air threat is critical in determining required organizational capabilities. Finally, counterair doctrine provides the framework for the Army's responsibilities in theater air and missile defense operations. Next, the paper examines the alternative organizations. This chapter discusses the missions and organizational structure of the two alternative theater air and missile defense organizations.

The criteria that will be used to analyze the two organizations are then discussed. Command and control, planning, coordination, and acceptability serve as the criteria for analyzing the alternative organizations. Acceptability is an essential criterion because the benefits of the selected alternative must justify the allocation of scarce resources required to establish and/or maintain the headquarters.

Chapter 4, analysis of the alternatives, is the preponderance of this study. Both alternative organizations are analyzed using the criteria described in the previous paragraph. The analysis demonstrates that the establishment of an AAMDC is essential for effective theater Army air and missile defense operations in the twenty-first century. The AAMDC provides for the best command and control, planning, and coordination of theater Army air and missile defense operations. Additionally, the improved capabilities the AAMDC contributes to the joint air and missile defense effort fully justifies the expenditure of resources to establish the headquarters.

The following chapter establishes the environment in which the Army's theater air defense operations will be conducted.

ENVIRONMENT

TRADOC Pamphlet 525-5 states "In the early twenty-first century, the United States will face challenges of unprecedented complexity, diversity, and scope."⁴ The end of the Cold War and exponential advances in technology has altered the strategic environment. As the 1998 National Security Strategy states the environment is "dynamic and uncertain, replete with a host of threats and challenges that have the potential to grow more deadly."⁵ Recent interventions in Southwest Asia, Somalia, Haiti, Bosnia, and Kosovo illustrate the broad spectrum of military operations the Army must be prepared to conduct in the early decades of the twenty-first century.

Significant technological advances have also altered the global environment as the Army enters the next century. The technological boom is not over yet as "Information technology is expected to make a thousandfold advance over the next twenty years."⁶

Based on increased availability of information, the United States Army must carefully examine its twentieth century organizations and operations. Both organizations and operations must be capable of leveraging recent technological developments.

The United States Army has recognized the changing strategic environment. Force XXI is the Army's vehicle for change. TRADOC Pamphlet 525-5, Force XXI Operations, articulates the Army's vision of future military operations. It was designed to drive the development of future doctrine, organizations, training, leadership, and materiel. The Army's vision for Force XXI organizations is essential in the analysis of future theater air defense organizations.

Force XXI operational concepts provide a conceptual foundation for the development of Force XXI organizations. TRADOC Pamphlet 525-5 states that Force XXI organizations must be led by innovative leaders, be tailorable for diverse mission requirements, and be organized around information processing and dissemination.⁷ These imperatives have been carefully integrated into the evaluation criteria contained in Chapter 3.

Force XXI will operate in a complex strategic environment. This places a premium on innovative leaders. As Force XXI Operations states, Force XXI leaders must have "a keen awareness of the world and know the role of military force in that world."⁸ Force XXI commanders must be willing to adapt organizations and operations to meet the challenges of new environmental conditions. Commanders must have vision to anticipate changing conditions, and have the intellectual flexibility to develop imaginative solutions to these new conditions. Force XXI commanders must also have the courage accept risk

in implementing new solutions. Leadership will be analyzed in the command and control capabilities of both alternative organizations.

Force XXI organizations must be tailorable for diverse mission requirements. The Army will be required to perform wide spectrum of military operations. Domestic resource constraints do not permit the Army to maintain separate specialty units for every potential mission. Force XXI organizations must be able to rapidly reorganize in order to meet mission requirements. The alternative theater air defense organizations' ability to reorganize will be analyzed in Chapter 4.

Force XXI organizations must be organized around the efficient processing and dissemination of information. Technological developments have made an abundance of information simultaneously available to all echelons of command. Organizations must be structured to effectively leverage this increased information capability. Efficient processing and dissemination of information enables US forces maintain the initiative by acting faster than the enemy.

Force XXI organizational concepts are essential to the study of future theater air and missile defense force structure. Force XXI organizations must be led by innovative commanders, be tailorable to meet diverse mission requirements, and be organized around information processing and dissemination. These concepts provide the foundation for the analysis of Force XXI theater air and missile defense organizations. The air threat and counterair doctrine are also critical environmental considerations.

Air Threat

In the early twenty-first century, the U.S. Army will no longer face the predictable "massive Soviet style" air threat.⁹ Instead, the Army will face a more diverse and equally

dangerous air threat. The air threat to Force XXI includes unmanned aerial vehicles, cruise missiles, helicopters, fixed-wing aircraft, and ballistic missiles. These threats are capable of attacking U.S. forces and critical assets across the entire width and depth of the battlefield. Enemy air assets are also capable of striking at any time, from U.S. initial entry operations through redeployment.

Iraq's use of SCUD missiles during the Persian Gulf War highlighted the fact that the air threat to U.S. forces and assets is real. The employment of even primitive ballistic missiles had significant strategic implications. Iraqi missile attacks on Israel could have easily jeopardized the stability of the entire allied coalition. Aerial delivered chemical and biological munitions increase the potential for catastrophic consequences of future air attacks. With the proliferation of weapons technology, even small nations can pose a significant air threat the US forces and assets. Theater Army air and missile defenses must be capable of defeating an entire array of aerial threats.

Counterair Doctrine

In order to analyze theater Army air and missile defense organizations it is important to understand the Army's responsibilities in joint air and missile defense operations. Joint Publication 3-01.5 states, "successful conduct of theater air defense requires the integrated operation of all available air defense weapons systems of all components."¹⁰ Because effective theater air and missile defense operations require contributions from all services, the joint force commander usually appoints a single commander to integrate the joint air and missile defense effort. This commander is the area air defense commander (AADC).¹¹ Joint doctrine states "The AADC assists the JFC in determining missions, communications priorities, rules of engagement for active

defense forces based on assessment and prioritization of forces, critical assets, and population centers to protect.”¹² Theater Army air and missile defense operations must therefore support the AADC’s concept of operations.

FM 100-7, Decisive Force: The Army in Theater Operations, is the Army’s doctrinal manual for the operational-level of war. The manual articulates the operational-level responsibilities of the theater Army air defense commander. These responsibilities assist in the understanding of the Army’s role in theater air and missile defense operations.

The senior Army air defense commander in theater serves as the Army operational-level air defense commander and the Army air defense coordinator (ADCOORD) to the land component and air component commanders.¹³ He is responsible for the following functions:¹⁴

- **Planning theater air and missile defense force projection and sustainment operations.** The theater air defense commander and his staff must be proactively involved in the development of air and missile defense planning from conception of the CINC’s plan through execution. Potential air and missile threats may require ADA units to be some of the first US military forces deployed in a contingency operation. Early deployment may be required in order to protect joint force entry operations. The substantial threat of ballistic missiles, as well as an entire array of potentially hostile aerial platforms, requires detailed operational-level planning from pre-deployment through redeployment. The theater Army air defense headquarters must be fully capable of meeting this demanding requirement.

- **Integrating the air defense communications systems with the Area Air Defense Commander and operational-level ADA brigades, corps, Air Operations Centers (Battlefield Coordination Element), control and reporting center (CRC), and AWACS (airborne warning and control system).** Counterair operations are by nature joint operations. The theater Army ADA commander and his staff must coordinate Army air and missile defense operations horizontally and vertically. The theater air defense commander must have the both the personnel and communications equipment to integrate the Army air and missile defense operations with all joint and multi-national operations. The Army's theater air and missile defense headquarters must also have the ability to synchronize all echelons of Army ADA operations within the theater.
- **Coordinating the theater air and missile defense linkages with the Air Component Commander, Maritime Component Commander, and allied ADA forces. These linkages include interface with intelligence sources, Offensive Counterair, Theater Missile Defense attack operations, space operations, and logistics.** This function illustrates the fact that air and missile defense operations are complex. Many factors influence the success of air and missile defense operations. The theater air defense commander and his staff must have the capability to plan and coordinate a myriad of activities in support of theater air and missile defense operations. The headquarters must have the personnel and expertise to leverage operational and strategic capabilities in support of theater air defense missions.

- **Training and evaluating all Army ADA organizations assigned to the theater from peacetime, to conflict, to war.** The theater Army ADA headquarters must be capable of commanding and controlling ADA forces during conflict. The headquarters also has a vital role during peacetime. A standing theater Army air defense headquarters is required in order to train and evaluate subordinate air defense forces. The theater Army air defense headquarters must have authority and capability to direct and supervise the training of subordinate units.

Recommending priorities for allocation of logistics requirements (manning, arming, fixing/maintaining, moving, fueling, and sustainment of the soldier) for all ADA organizations in the theater. The theater Army air defense headquarters is responsible for more than planning and coordinating employment of air defense assets. The headquarters must be capable of monitoring, analyzing, and coordinating logistical requirements for Army air defense forces in theater. **This function also includes the identification and recommendation for the prepositioning of war reserve materiel stocks related to air defense missions.**¹⁵

Geopolitical and technological changes have altered the environment in which the twenty-first century Army must operate. The Army recognizes that the new environment requires changes to the way it organizes and operates. Force XXI is the Army's vehicle for change. Force XXI organizational imperatives, the future air threat, and counterair doctrine establish the environment for examining alternative theater air and missile defense organizations. These alternative organizations will be described in the following chapter.

ORGANIZATION

US Army ADA forces are organized into three distinct echelons. The three echelons are divisional ADA forces, corps ADA forces, and EAC ADA forces. At the lowest echelon, an ADA battalion is organic to each US Army division. These battalions are comprised of only short-range ADA systems. The mission of the divisional battalion focuses on the protection of critical divisional assets, which facilitates the division's freedom of maneuver. The next echelon is the corps ADA brigade.

An ADA brigade is organic to each US Army corps. The corps ADA brigade is designed to operate between the tactical and operational levels of war. At the tactical level, the corps brigade protects critical corps assets from air and missile attack and surveillance. The corps ADA brigade is composed of both short-range and high-to-medium altitude air defense systems. The brigade's robust organization and increased weapons system capabilities enable the brigade to contribute to the counterair fight at the operational level. The purpose of counterair operations at the operational level is gain and maintain control of the theater air environment.¹⁶ This study focuses on the next echelon of US Army air defense forces- theater air defense forces.

The Army's third echelon of ADA forces are theater ADA forces. From 1995 to 1998 theater ADA forces consisted of only EAC ADA brigades. The EAC brigades were the highest echelon of ADA forces. However, in October 1998 the AAMDC was added to theater ADA forces. The AAMDC served as the higher headquarters for the two EAC ADA brigades.

This chapter details the structure of the two alternative theater-level ADA structures, the EAC brigade alternative and the Army Air and Missile Defense Command. First, we will examine the EAC brigade alternative.

EAC Brigade Alternative Organization

In this alternative, the EAC ADA brigade is the highest echelon of ADA forces. The mission of the EAC Brigade is to provide air and missile defense protection to critical theater assets. The EAC brigade executes its mission by directing the operations of subordinate ADA forces in the conduct of force and engagement operations.¹⁷ The EAC ADA brigade is commanded by an ADA colonel who also serves as the ADCOORD for the land component commander. The brigade commander is the principle advisor to the land component commander in all air and missile defense-related matters. In this alternative, the brigade commander and his staff are also responsible for integrating theater Army air defense operations with joint air and missile defense operations.

The EAC brigade is the command and control headquarters for all theater Army air defense operations. The EAC ADA brigade consists of six subordinate ADA battalions; a THAAD battalion, three Patriot battalions, and two Avenger battalions.¹⁸ A diagram of the EAC brigade organization is located in Appendix A.

The EAC brigade's headquarters and headquarters battery contains the brigade command group and the administrative and logistical support structure for the brigade. The command group includes both a deputy commander and an executive officer. The deputy commander performs missions delegated by the brigade commander, and the executive officer supervises and coordinates the actions of the brigade staff.

There are seven major staff sections in the brigade headquarters; Logistical Readiness Center, Administration/Logistics Section, Operations/ Intelligence Section, Liaison Section, Fire Direction Section, Systems Technical Staff, and the Communications Section. For this analysis, the Operations/Intelligence and Liaison sections warrant closer examination.

The Operations/Intelligence section constitutes the core of the brigade's tactical operations center. The section is responsible for planning, organizing, training, and operations of the ADA brigade. The Operations section consists on three officers, the operations officer, an assistant operation officer, and a plans officer.¹⁹ The intelligence section is responsible for the brigade intelligence activities. These activities include intelligence preparation of the battlefield (IPB), security, and collection, analysis, and dissemination of intelligence data to support the brigade's ADA operations. The intelligence sections consists of the intelligence officer and assistant intelligence officer.

The Liaison Section is comprised of officers and noncommissioned officers deployed to higher, adjacent, and subordinate commands. The liaison teams assist in the planning and coordination of ADA brigade operations.²⁰ At a minimum liaison teams are deployed to the land component commander, battlefield coordination element, and the area air defense commander.

The EAC ADA brigade commander and his staff must simultaneously command and control subordinate air defense battalions and integrate theater Army air defense operations into the joint counterair fight. The commander must accomplish these task with the organization described above. The other alternative theater Army air defense organization is the AAMDC.

Army Air and Missile Defense Command Alternative Organization

In this alternative organization, the AAMDC is the highest echelon of ADA command.²¹ The mission of the AAMDC "is to strategically deploy combat ready air defense units and perform air and missile defense planning, coordination, integration and execution in support of the CINC's priorities."²² The AAMDC commander and his staff "establish and integrate continuous, all weather, 24 hour, dedicated, ground based TMD and AD systems in theater."²³

The AAMDC is commanded by a brigadier general, who has had a career in the Air Defense Artillery. The AAMDC commander serves as the Army Theater Air Defense Coordinator. He serves as the link between the land component commander and all Army air defense units in theater. The AAMDC commander commands EAC ADA brigades. The AAMDC assumes many of the theater air defense responsibilities of the EAC ADA brigades, and allows the EAC ADA brigades to focus their efforts on providing air defense protection to critical theater-level assets.

The AAMDC is made up of both active and reserve component personnel. The entire organization consists of one hundred and eighty-one personnel. Sixty-nine of these personnel from the active component (AC) soldiers and one hundred and twelve are reserve component (RC) soldiers. The AAMDC is organized into the following sections: Command Section; G-1, Personnel Section; G-2, Intelligence Section; G-3, Operations Section; G-4, Logistics Section; Communications/Electronics Section; Headquarters Battery; and Maintenance Section. While most of these sections perform standard general staff functions, the AAMDC command section is unique.

The AAMDC command section provides a rapidly deployable theater army air defense element (TAADE). The TAADE is designed as an initial entry coordination cell. Its purpose is to rapidly deploy to a theater of operations in order to plan and coordinate the Army's portion of the joint counterair and TMD effort.

The TAADE is organized into nine cells.²⁴ The Tactical Operations Center Cell consists of two AC and five RC personnel. It serves as the center for synchronization and integration of the theater Army air defense operations. The Active Defense Cell is comprised of five AC and two RC personnel. The cell "monitors airspace management, situational awareness of active defense capable units, and the air integrated air picture."²⁵ The Passive Defense Cell is responsible for analyzing the friendly assets protected and not protected by air and missile defenses. The section also provides early warning to theater forces of air and missile attack. The section is comprised of four personnel. The Attack Operations Cell monitors high value theater air and missile defense targets. The cell works closely with the land component commander's deep operations cell. The C4I cell consists of eight AC and four RC personnel. This cell streamlines the sensor to shooter link by assessing information from national and operational sensors and disseminating it to the ADA, artillery, and aviation shooters. The cell shares this information to the other TAADE cells.

The TOC Support Cell is manned by five AC and one RC personnel. It is responsible for the installation, maintenance, and operation of communications equipment required by the TAADE. The Sensitive Compartmentalized Information Facility cell is responsible for intelligence gathering and special access programs. It is manned by four AC and one RC personnel. The final TAADE cell is the Coordination

Team Cell. It is comprised of 27 RC personnel who serve as liaison teams to the other joint and multi-national headquarters.

This chapter has detailed the structure of the alternative theater Army air defense organizations. The criteria for evaluating the alternatives air defense organizations will be discussed in the following chapter.

CRITERIA

The central issue in this study is the effectiveness of alternative organizations in the planning and execution of theater Army air defense operations. The criteria for evaluating the effectiveness of the EAC Brigade and AAMDC organizations are Command and Control, Planning, Coordination, and Acceptability. These criteria serve well as tools to evaluate the effectiveness of theater Army air defense command and control structures.

Command and control

Joint Pub 3-0 defines command and control as “the exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of a mission.”²⁶ This important doctrinal term must be separated into its two component parts, **command** and **control**, in order to fully understand its implications to theater air defense.

Command, as defined in FM 101-5-1, is “the authority that a commander in the Military Service lawfully exercises over subordinates by virtue of rank or assignment.”²⁷

Authority is the essential component of command. It is authority that empowers the commander to direct the actions of his subordinate personnel and units. Responsibility accompanies command. As the FM 101-5-1 definition states, "Command includes the responsibility for effectively using available resources and for planning for the employment of, and organizing, directing, coordinating, and controlling military forces for the accomplishment of the assigned mission."²⁸

Control is the method a commander uses to direct the actions of his subordinate units. Effective control is a two-way process. In one direction, the commander and his staff issue orders and intent to guide the actions of subordinate units. In the opposite direction, subordinate units provide situational information back to the commander. This feedback enables the commander and his staff to assess the situation and make future decisions.

As the size of a military force and the complexity of its mission increase so does the importance of effective command and control. "A one-man Army requires no command, at least not in the sense that a hundred-man Army does."²⁹ Because of the increased scope of operational-level air defense operations, command and control is critical for effective theater air defense operations. This study will examine three command and control issues.

First, the analysis will examine the expertise of the Army's theater air defense commander and his staff. Because the commander of the alternative organizations commands all theater-level Army air defense forces, he and his staff must have the air defense expertise to direct the training and employment of these forces. As the theater Army ADCOORD, the commander must also have the required air defense expertise to

advise the land component commander on all matters pertaining to air defense. He must not only be an expert in Army air defense operations, but he must be the Army's expert in all aspects of joint counterair operations.

Secondly, the alternative organizations' span of control will be analyzed. FM 100-7 states operational battle command involves a greater span of control than tactical battle command.³⁰ Theater Army ADA forces will normally consist of at least six ADA battalions. The Army's theater ADA organizational structure must facilitate effective and efficient control of these forces. Increased battlespace in Force XXI operations will also influence the theater Army air defense commander's span the control.

The final command and control issue that will be assessed is the ability of each organization headquarters to tailor the necessary air defense forces to meet mission requirements. One of the Force XXI organizational design requirements is the ability to rapidly tailor the necessary forces for missions from ranging from general war to stability and support operations.³¹ The alternative organizations' capability to organize and train subordinate ADA forces will be analyzed in the following chapter.

Planning

Planning is the process of designing future operations in anticipation of changing battlefield conditions. "Operational planning begins with the assignment of a mission or with a commander's recognition of a requirement; it continues until the mission is accomplished."³² Two critical areas of planning will be analyzed for both alternative organizations; the effective participation in the theater planning process, and the ability to simultaneously monitor current operations and plan for future operations.

The theater Army air defense headquarters must be involved in all stages of theater planning. As FM 44-100 states, "Combatant commanders seek the synergy inherent in joint operations by synchronizing the complementary warfighting capabilities of all the components and supporting commands into a unified effort."³³ To ensure an integrated joint air defense, the theater Army air defense organizations must be capable of integrative planning with the other service components and allied forces. This ensures Army air defense considerations are thoroughly integrated into all theater operations. The ability of the alternative organizations to participate in theater planning processes will be examined in the following chapter.

Theater Army air defense planning does not terminate with the issue of the initial operations order. Battlefield conditions continually change, and the ADA headquarters must be capable of continually assessing the changing conditions. The headquarters must then anticipate future actions and develop detailed plans to meet the changing conditions. The alternative organizations must fully capable of monitoring current operations while simultaneously planning future operations. The analysis will examine the ability of both alternative organizations to perform this essential planning task.

Coordination

FM 101-5-1 defines coordination as the "exchange of information to inform and integrate, synchronize, and deconflict operations."³⁴ Because the different services bring different requirements and capabilities to the joint counterair fight, close coordination between the components is required for unity of effort. Unity of effort is one of the fundamental principles of joint counterair doctrine.³⁵ The Army's theater-level air defense headquarters must have the ability to continuously synchronize Army air and

missile defense operations with the other joint counterair operations. Liaison and communications are the means of affecting coordination with the other joint forces.

FM 44-100 states " Robust liaison facilitates understanding, coordination, and mission accomplishment."³⁶ Liaison between the theater Army air defense headquarters and other joint headquarters is essential for an integrated joint counterair effort.

According to Army air defense doctrine, "The senior air defense headquarters in theater is responsible to provide liaison to the land component commander, the battlefield coordination element, and the area air defense commander."³⁷ Additionally, based on the situation requirements the headquarters may be required to send liaison to other service and multi-national headquarters. The liaison capabilities of both alternative organization will be analyzed in the following chapter.

"An integrated air defense requires the provision and exchange of essential real-time information."³⁸ Communications systems must be able to pass track and other air and missile information between multiple service in order to expedite a seamless sensor to shooter link. The analysis will examine the ability of both alternative organizations to link critical communications systems into the other service headquarters.

Acceptability

The most effective theater Army air and missile defense organization will be identified from the three previous criteria. However, in a resource constrained environment the cost of implementing the selected alternative must be assessed.

Acceptability is then a cost-benefit analysis of the selected alternative organization. The benefits of the selected alternative must justify the allocation of resources to establish and/or maintain the selected headquarters.

Command and control, planning, and coordination are critical components of effective theater Army air defense operations. Acceptability is a measure of whether the advantages of the alternative organization justify the cost to the Army. We will now evaluate the alternative theater Army air defense headquarters using these criteria.

ANALYSIS

While the analysis of alternative theater-level air defense organizations is subjective in nature, Force XXI operational concepts, joint doctrine, and historical examples do provide a basis for analysis. The evaluation criteria discussed in the previous chapter provide a framework to analyze the alternative organizations. The analysis suggests that, in a Force XXI environment, the AAMDC is a more capable Army theater-level air defense headquarters alternative. The AAMDC provides for better theater-level command and control, planning, and coordination than the EAC brigade alternative. Equally important, the enhance contributions the AAMDC provides to the joint air and missile defense effort come at an acceptable cost. Thus, the allocation of scarce resources required to establish the AAMDC is justifiable in terms of the capabilities it provides. The analysis follows:

AAMDC

Command and Control

Because the AAMDC commander and staff have greater air and missile defense expertise, a smaller span of control, and more flexibility to tailor air defense forces, this

alternative provides for more effective command and control of theater Army air and missile defense operations than the EAC brigade alternative. First, we will examine the expertise of the AAMDC commander and his staff.

The AAMDC commander is best qualified to be the Army's theater air and missile defense commander. He is a general officer who has served the preponderance of his career in the Air Defense Artillery branch. In over a twenty-year career, the commander developed technical, tactical, and operational expertise necessary to command theater air defense forces. He has successfully commanded at all echelons of ADA command, from platoon through brigade command. The AAMDC has also served in key staff ADA positions at all echelons of command, which span both the tactical and operational levels of war.

Because the ADA brigades are the first echelon of operational-level ADA units, brigade command is necessary to give an officer the expertise required to command and control theater Army air defense forces and operations. A former ADA brigade commander possesses the knowledge and experience of how to best employ all echelons Army air and missile defense forces. This makes the AAMDC commander the best-qualified Army officer to be the joint force subject matter expert in all areas of theater Army air and missile defense. Brigade command also allows the AAMDC to master joint operations and the functions and responsibilities of joint forces. The AAMDC commander then has the expertise to effectively integrate theater Army air and missile operations into the joint air and missile defense effort. The AAMDC commander also possesses the expertise to develop his subordinate brigade commanders. The AAMDC commanding general's expertise brings additional credibility to the joint environment.

Having a general officer, the AAMDC commander, represent the land component commander's interests has already proven to be influential in the joint air and missile defense operations. The AAMDC commander's expertise has led to the emerging doctrinal concept of the Deputy Area Air Defense Commander (DAADC).

When designated as the DAADC, by the AADC, the AAMDC commander assumes responsibility for the planning, coordination, and execution of all theater land-based air and missile defense operations.³⁹ In several recent training and operational exercises including Operation Desert Thunder, Roving Sands '97, Ulchi Focus Lens '97 and '98, Coherent Defense '97, and the Theater Missile Defense Initiative '98, this new role has greatly increased the effectiveness of theater air and missile defense operations.⁴⁰ During Operation Desert Thunder, MG Dennis Cavin (then BG) served as the DAADC. He successfully integrated all Kuwaiti and US land-based air and missile operations in accordance with guidance given by the AADC. It is unlikely that an EAC brigade commander would have had the same credibility with the Kuwaiti air defense commander, a general officer. Additionally, at the conclusion of the Coherent Defense '97 the Multi-Service Analysis Support Team reported that "Having the AAMDC commander serve as the DAADC increased the AADC's ability to integrate and synchronize AD/DCA operations in support of the JFC's mission."⁴¹ The AAMDC commander provides for the best expertise to command and control theater Army air and missile defense operations. However, the expertise of the AAMDC does not reside solely in the commanding general.

The staff of the AAMDC provides for greater theater-level air and missile defense expertise than that of the EAC brigade alternative. The structure and the manning of the

AAMDC staff are the critical reasons for this expertise. The organization of the AAMDC staff was designed for the sole purpose of commanding and controlling theater Army air and missile defense operations. The AAMDC headquarters is organized into sections that have distinct functional responsibilities in the planning, execute, and assessment of active defense, passive defense, attack operations, and C4I operations.

The personnel manning of the AAMDC sections provide a significant expertise advantage to the AAMDC. The AAMDC is not just another ADA headquarters. Subject matter experts man each of the AAMDC sections. The AAMDC's subject matter experts include special operations, aviation, and field artillery officers. Additional intelligence, signal, and logistical specialist have also been added to the AAMDC organization. These specialists provide the AAMDC with the necessary expertise to plan, execute, and assess all aspects of theater air and missile defense operations. The depth of expertise in the AAMDC staff consists of more than the addition of these specialty officers.

The staff of the AAMDC is much more experienced than that of the EAC brigade. The deputy commander, chief of staff, and operations officer are all full colonels. The current chief of staff is a former brigade commander.⁴² Additionally, the other staff officers in the AAMDC are generally at least one rank higher than those on the EAC brigade staff. With this additional rank comes additional experience and expertise. The second advantage of the AAMDC in command and control is a small span of control.

The span of control of the AAMDC alternative is more effective than the EAC brigade alternative. The span of control of the AAMDC is normally limited to one subordinate EAC ADA brigade. The primary function of the AAMDC headquarters is to coordinate the integration of theater Army air and missile defense operations into the

joint air and missile defense effort. The AAMDC was not designed as an additional layer of command for the control tactical ADA forces. The EAC brigade is responsible for this function.

The AAMDC commander and staff develop the Army's theater air defense plan in close collaboration with the other joint headquarters. The AAMDC then issues the plan to subordinate EAC ADA brigade for execution. This enables the subordinate EAC brigade to focus its efforts on the employment of its subordinate battalions. This is often a consuming task for an EAC ADA brigade. During Operation Desert Storm, the 11th ADA Brigade included over six battalion-sized task forces dispersed over 325,000 square kilometers.⁴³ It took the brigade commander as much as one full day of travel to visit a subordinate unit.⁴⁴ This did not allow the commander to effectively perform his theater Army air and missile defense integration responsibilities. The existence of an AAMDC relieves the EAC brigade of significant joint force coordination, and makes the control of subordinate battalions the brigade's primary function. The final command and control advantage of the AAMDC is the flexibility with which it can tailor forces for different mission requirements.

The hierarchical structure of the AAMDC alternative provides for more flexibility in tailoring of forces. The commander of the AAMDC commands all EAC ADA forces.⁴⁵ As FM 100-5 states, "cost and scarcity of RMA-type resources will simply reinforce the need for hierarchical, authoritative allocation."⁴⁶ Since the commander of the AAMDC owns all EAC ADA forces in both peacetime and in war, he has more available forces with which to organize a force for mission requirements. The AAMDC also provides unity of effort in the training of subordinate brigades.

Standardization is essential in the tailoring of forces for mission requirements. The AAMDC alternative provides for standardization of EAC brigade organization, training, and operations. Before the activation of the AAMDC, the EAC brigades had no higher headquarters. Each EAC ADA brigade organized, trained, and operated at the discretion of the brigade commander. If forces from separate EAC brigades were required to form a task force for a contingency mission, the lack of standardization would result in organizational inefficiencies. Additional training time would be required to standardize operating procedures. The AAMDC's force projection command and control capability is an additional tailoring advantage.

The TAADE is a rapidly deployable initial entry air and missile defense command and control capability. It is organic to the AAMDC. The centerpiece of the TAADE is the air and missile planning and control system (AMDPCS). The AMDPCS is a suite of 15 specific computer/software programs designed for TMD operations. The systems receive information feeds from over twenty external sources that provide the necessary data for successful TMD operations.⁴⁷ The TAADE is manned by approximately one hundred and eight soldiers, and it is deployable within 72 hours on one C-5A aircraft.⁴⁸

This initial entry command and control capability can be deployed without affecting the capabilities of subordinate EAC brigades. A subordinate brigade can use all of its organic resources to prepare subordinate battalions for the operational contingency. The AAMDC's TAADE capability and its ability to tailor forces from more than one EAC brigade give the AAMDC alternative a significant command and control advantage over the EAC brigade alternative.

The AAMDC alternative provides for the best command and control capability of theater air defense forces. The expertise of the AAMDC commander and his staff, the small span of control, and the increased flexibility to tailor air defense forces makes the AAMDC superior to the EAC brigade alternative in the criteria of command and control.

Planning

The AAMDC provides for the best planning capability of the two theater Army air defense alternatives. The AAMDC's capability to participate in the theater planning process and its ability to simultaneously monitor current operations while planning future operations are superior to those of the EAC brigade alternative.

The organization and expertise of AAMDC, as discussed above, provide for the most effective integration of theater Army air and missile defense operations into the theater planning process. The AAMDC plans cell consists of five officers. This cell, when augmented by the subject matter experts within the AAMDC during the planning process, will ensure a more competent theater air defense plan than the skeletal EAC brigade operations section is capable of developing.⁴⁹ The AAMDC plans cell can then develop supporting theater operations plans based on their participation in the theater planning process.

The AAMDC conducts regularly scheduled exercises in most theaters.⁵⁰ This training program allows the AAMDC to continually integrate Army air and missile defense operations into theater operations. The AAMDC can continually refine their theater contingency plans based on lessons learned from these exercises. The AAMDC's participation in theater planning focuses the planning efforts of subordinate brigades. The EAC brigade planning will only involve employment of subordinate battalions to protect

critical theater assets. EAC brigades will not have to expend their limited resources on developing an entire theater Army air and missile defense plan. The AAMDC planning capability significantly improves the entire span of theater Army air defense planning. The second planning advantage of the AAMDC is its ability to simultaneously plan for future operations while monitoring current operations.

The structure and manning of the AAMDC facilitates the organization's ability to simultaneously monitor current operations and plan for future operations. From predeployment through redeployment, the AAMDC staff provides for a future planning capability unparalleled by the EAC brigade alternative. In initial entry operations, the TAADE is manned with sufficient personnel to conduct twenty-four hour operations. In addition, the five man plans cell focuses on future operations. If necessary, the remainder of the AAMDC deploys to theater and augments the planning cell with additional personnel from the operations/intelligence section. The AAMDC has the personnel and resources to continually monitor current operations and plan for future operations.

The AAMDC provides for the best theater Army air defense planning capabilities of the two alternative organizations. The AAMDC's ability to integrate Army air and missile defense into the theater planning processes and its ability to simultaneously plan future operations while monitoring current operations is significantly better than the capabilities of the EAC brigade alternative.

Coordination

The AAMDC provides for the best coordination with the other critical joint force headquarters of the two alternative organizations. The AAMDC's enhanced liaison and

communications capabilities account for this advantage: First, we will examine the liaison capability of the AAMDC.

As the 11th ADA Brigade Operation Desert Storm AAR stated, "the key to successful integration (with joint air and missile defense operations) starts with liaison teams."⁵¹ The AAMDC has a robust liaison section that consists of twenty-seven personnel. The primary mission of the liaison personnel is to assist in the coordination and integration of Army air and missile defense operations into joint force air and missile defense operations. While actual allocation of the liaison teams is situation dependent, teams are normally deployed to the joint force headquarters, air component headquarters, special operations command, and the theater support command headquarters.⁵²

The liaison team the 32nd AAMDC normally sends to the area air defense commander is an example of the AAMDC's exceptional liaison capability. The liaison team is headed by an ADA colonel and consists of between eight to twelve personnel. The team has active defense, attack operations, and IPB experience.⁵³ This liaison capability cannot be equaled, in numbers or expertise, by the EAC brigade alternative because the brigade is not resourced to perform this mission.

The liaison personnel in the AAMDC are reserve-component soldiers. The reservists provides a significant advantage to the AAMDC in terms of stability. The reserve soldiers will be assigned in their positions much longer than an active duty field-grade officer. This allows the experience and expertise of liaison teams to remain in the AAMDC for extended periods of time. While this provides a unique capability to the AAMDC, deeper analysis reveals a problem with the reserve component manning of liaison teams.

During Operation Desert Thunder, several of the AAMDC liaison personnel could not meet the deployment timeline of the AAMDC.⁵⁴ Because the President did not enact a reserve call-up, the part-time reservists did not have legal protection of their civilian jobs. A Presidential call-up of the reserves is a significant political issue, and it normally takes time to obtain. The liaison teams are critical to the effectiveness of rapidly deployable TAADE. The TAADE cannot wait for the President to enact the reserve call-up. During Operation Desert Thunder, the vacant reservist liaison slots were filled by active duty soldiers stationed at Fort Bliss. The ad-hoc liaison personnel did not have the experience or the expertise of the reservist liaison teams.

Because of the Operation Desert Thunder experience, the Commanding General of the US Army Air Defense Artillery Center has requested a change to the manning of the AAMDC's liaison teams.⁵⁵ Either active-guard reservists or active duty soldiers will soon fill eighteen of the twenty-seven liaison slots to resolve this readiness issue. Communications is the other critical component in effective coordination.

The central command and control node of theater Army air and missile defense is the AAMDC tactical operations center. The AMDPCS is the critical information/communications system in the AAMDC tactical operations center. The AAMDC staff continually analyzes and processes information received through the AMDPCS. An example of the capabilities of the AMDPC, when manned by the AAMDC staff, is the theater missile warning system.

In 1998, the 32nd AAMDC successfully implemented a theater-wide missile early warning system in an operational theater.⁵⁶ Through the information received from the AMDPCS and a TBM pager system, the AAMDC staff can alert units throughout the

theater of an imminent missile attack within a matter of seconds. It takes less than ten minutes for a TBM launched from Iraq to reach Kuwait, and early warning is critical for protection of the joint force.⁵⁷ Within two minutes of detecting a TBM launch, the AAMDC staff can disseminate a TBM warning throughout the theater. The warning includes the estimated time and location of impact, as well as an associated NBC warning.⁵⁸

Although technological advances are essential to this effective communications network, the expertise of the AAMDC staff is essential for successful implementation. The AAMDC's advanced information and communications technologies cannot simply be placed in subordinate headquarters. The equipment requires continual manning by trained experts who can analyze and process the information effectively and efficiently. The AAMDC provides for both the personnel and the technology for this improved air and missile defense coordination capability.

The AAMDC provides for the most effective coordination capabilities in theater Army air and missile defense operations. The organization's liaison and communications capabilities provide for this effective coordination capability.

EAC Brigade

While 11th ADA Brigade, an EAC ADA brigade, performed the role of a theater air defense headquarters during Operation Desert Storm, after action reports indicate the brigade headquarters had trouble in command and control, planning, and coordination.⁵⁹ These shortfalls limited the brigade's effectiveness in the execution of the required functions of a theater Army air defense headquarters. In the EAC brigade alternative, the fundamental problem is the EAC brigade is required to perform two separate and distinct

missions. First the EAC brigade must command and control its subordinate battalions in the protection of critical theater assets. Secondly, the EAC brigade must coordinate the integration of Army air and missile defense operations with the other joint headquarters. The EAC brigade is fully capable of executing effective command and control of subordinate battalions. However, the EAC brigade is not manned or resourced to effectively perform the coordination and integration mission. FM 44-71, ADA Brigade Operations, provides the evidence. The doctrinal manual states the EAC brigade's mission is to "command and control the operations of subordinate ADA battalions."⁶⁰ Additionally, the manual states "the AADCOM will provide support in the areas of coordination, planning, integrated defense design, and logistics to the EAC brigade."⁶¹ The EAC brigade alternative is less effective than the AAMDC alternative in command and control, planning, and coordination of theater Army air defense operations.

Command and Control

The EAC brigade alternative does not provide for an effective command and control capability for theater air defense operations for three reasons. First, the EAC brigade does not have the necessary expertise to perform the critical theater coordination and integration function. Secondly, the EAC brigade span of control is too great to effectively perform all functional responsibilities of an Army theater air and missile defense headquarters. Finally, the EAC brigade alternative organization has a limited capability to tailor forces for different mission requirements.

The EAC brigade headquarters does not have the expertise to effectively perform the functions of a theater air defense headquarters. Both the EAC brigade commander and his staff lack the required knowledge and experience to effectively integrate Army air

and missile defense operations with the other joint headquarters. The EAC brigade commander does not have the equivalent experience and expertise of the AAMDC commander. He is commanding a brigade for first time. The EAC brigade commander's previous command experience was that of a battalion commander where he worked directly for an ADA brigade commander. There is no doubt that successful battalion command prepares him for the responsibilities of brigade command. However, it does not adequately prepare him to effectively perform the responsibilities of the theater air defense coordinator for the land component commander. The EAC brigade commander does not have the necessary experience of coordinating the Army's portion of air and missile defense with the other joint headquarters. While the EAC brigade commander does not have expertise of his AAMDC counterpart, neither does his staff.

The staff of the EAC brigade was designed to command and control subordinate battalions in the protection of critical theater assets.⁶² The staff was not designed or resourced to perform the theater air defense coordination and integration functions. The best example is EAC brigade operations/intelligence section.

The operations/intelligence section of the EAC brigade is comprised of only three officers. The EAC brigade operations officer is a major, and he is assisted by two captains. One serves as the assistant operations officer and the other is designated as plans officer.⁶³ It is readily apparent that the operations section is not resources to perform the vast array of tasks required in theater Army air and missile defense operations. Operation Desert Storm provides recent evidence.

In Operation Desert Storm, the 11th ADA brigade served as the theater air defense headquarters.⁶⁴ To perform this role, the brigade headquarters was augmented by

approximately two hundred additional personnel.⁶⁵ A large span of control also contributes the EAC brigade's ineffective command and control of theater Army air and missile defense operations.

In Roving Sands '96, the 11th ADA Brigade commanded and controlled eight subordinate battalion-sized ADA units.⁶⁶ These units included US Army active and reserve battalions, as well as German, Canadian, and Dutch air defense forces. The small EAC brigade staff is fully consumed with the task of commanding and controlling its subordinate battalions. It cannot perform the necessary coordination and integration with the other joint forces as effectively as the AAMDC organization. The additional echelon of command in the AAMDC alternative provides a clear separation of responsibilities between the EAC brigade and the AAMDC. This separation of responsibilities allows the EAC brigade to focus its efforts on the command and control of its subordinate battalions. This is role the EAC brigade staff was designed to perform. The EAC brigade alternative also provides less flexibility in the tailoring of theater air and missile force for different mission requirements.

The EAC brigade alternative provides for a limited capability to tailor theater air and missile defense forces for mission requirements. Unlike the AAMDC commander who commands all EAC ADA units, the brigade commander has a limited number organic assets he can reorganize for a given mission. The EAC brigades have no higher ADA headquarters in this alternative organization. The lack of standardized organizing, training, and operating procedures, all required to effectively tailor forces from different EAC units, was discussed in the AAMDC analysis.

Additionally, the headquarters of each brigade is not manned to enable flexibility in tailoring command and control. This alternative does not have the organic capability to rapidly deploy a command and control element for a contingency operation, as the TAADE provides for the AAMDC. The numerous responsibilities involved in preparing subordinate battalions for the contingency mission will consume the small EAC brigade staff. The 94th ADA Brigade's role in the preparation and certification of a subordinate battalion for deployment to Southwest Asia highlights the limited ability of the EAC brigade staff.⁶⁷

94th ADA Brigade played a significant role in the training and certification of 1-7 ADA Battalion for the battalion's deployment to Southwest Asia. This effort fully consumed the small brigade staff of the 94th ADA Brigade. The brigade planned, executed, and supported a comprehensive training program for 1-7 ADA Battalion. The brigade was responsible for in-briefs, out-briefs, resource coordination, and site surveys. The brigade supported an external observer/controller team consisting of over one hundred soldiers. This support included both life support, vehicle support, and supply support for the observer/controllers. The brigade also served as the controlling headquarters for the sixteen-day certification exercise. If this had been an operational contingency mission, the brigade staff could not have additionally performed the necessary theater planning and coordination with the other joint headquarters. The AAMDC headquarters performs this critical function in the AAMDC alternative.

The EAC brigade alternative does not provide for the command and control capabilities of the AAMDC command. The lack of expertise of the EAC brigade

commander and staff, the large span of control, and the limited flexibility in tailoring ADA forces for mission requirements are not as capable as the AAMDC.

Planning

The lack of expertise and manpower also prevents the EAC brigade from being an effective theater-level Army air and missile defense planning headquarters. The brigade does not have the manpower of the resources to effectively participate in the theater planning process.

Because the EAC brigades have no higher headquarters, they have little input into the theater planning process. The area air defense commander develops the theater air and missile defense plan and the EAC brigade simply executes. Because the area air defense commander, usually the JFACC, does not have expertise in Army ADA operations the entire joint air and missile defense effort less than optimal. Even if the EAC brigade participates in the planning process, the brigade's planner, a captain, does not have the expertise required to develop a comprehensive theater Army air and missile defense plan. This flaw was evident in the 1997 Operation Desert Thunder.

One of the critical issues in the Operation Desert Thunder after action report was the necessity for an integrated theater air and missile defense plan. As US military involvement in Southwest Asia has not ended since Operation Desert Storm, it is astonishing an integrated theater air and missile plan does not exist. The reason for deficiency is the absence of a theater Army air defense planning headquarters. The AAMDC alternative provides a solution to this problem.

The EAC brigade's limited staff also prevents the EAC brigade staff from simultaneous planning and execution. Command and control of six subordinate

battalions, dispersed over thousands of square kilometers, requires almost all of the capabilities the EAC brigade staff. A three man operations staff cannot efficiently monitor current operations throughout an entire theater, anticipate changing battlefield conditions, and develop plans for future operations.

The EAC brigade does not have the manning or the expertise required to effectively perform the planning functions of a theater Army air and missile defense headquarters. The staff does not have capability to integrate into the planning processes of other joint headquarters. In addition, the brigade does not have the required resources to effectively monitor current operations while planning future operations. The AAMDC alternative provides for a more capable theater planning headquarters.

Coordination

The EAC brigade headquarters does not have the required expertise and manning to effectively coordinate theater Army air and missile defense operations with the other joint air and missile defense headquarters. The EAC ADA brigade organization does not provide for the necessary liaison personnel to perform this critical function.

The liaison section of the EAC brigade is insufficient to provide for effective coordination with the joint force headquarters. The EAC brigade does not have the necessary personnel or expertise to perform effective theater-level liaison. In the Persian Gulf War, the 11th ADA brigade liaison section had to be augmented with additional personnel to perform effective liaison.⁶⁸ Even augmentation for the brigade liaison does not resolve this critical shortfall. Expertise and experience is required for effective liaison operations. Without sufficient manpower in the EAC brigade staff, information and communication systems are inconsequential in the coordination function. Trained

personnel are required man and analyze the information provided by the enhanced communications and information systems.

The EAC brigade does not provide for the liaison required for essential coordination of theater Army air and missile defense operations. This alternative's lack of manning and expertise provides for less coordination capabilities than the AAMDC alternative.

Acceptability

As the preceding analysis illustrates, the AAMDC provides for the greatest capabilities of a theater Army air and missile headquarters. The AAMDC provides for the best command and control, planning, and coordination of theater Army air and missile defense operations. The critical reason for this advantage is the AAMDC was specifically designed to perform the functional of a theater Army air and missile defense headquarters. Therefore, the acceptability issue is do the AAMDC contributions to the joint and missile defense justify the costs of establishing and maintaining the theater-level headquarters?

The critical cost of the AAMDC alternative is the one hundred and eight-one soldiers required to man the AAMDC. Experience in the Persian Gulf War simplifies this assessment. In order for an EAC brigade headquarters to perform the functions of a theater Army air defense headquarters, it had to be augmented by over two hundred personnel. Even after augmentation, the EAC brigade was not effective at integrating Army air and missile defense operations in the theater air and missile defense operations. This shortfall was due to excessive scope of responsibilities placed on the EAC brigade

headquarters. The AAMDC alternative provides a more effective organization of personnel required to perform the Army's theater air and missile defense mission.

CONCLUSION

Geopolitical and technological developments have altered the strategic environment as the United States Army enters the new millennium. The Army must continually assess whether organizational and operational changes are necessary to meet these changing conditions. A wide range of potential military missions and new technological innovations impact the way the United States Army must organize its forces. TRADOC Pamphlet 525-5 states that Force XXI organizations must be led by innovative commanders, organized around information processing and dissemination, and rapidly tailorable for diverse mission requirements. The AAMDC is an exemplifies these FORCE XXI organizational imperatives.

The AAMDC significantly improves the effectiveness of joint counterair operations. The AAMDC was specifically designed to facilitate the integration of Army and joint air and missile defense operations. The AAMDC provides for the command and control, planning, and coordination necessary for effective Army's theater air and missile defense operations.

The AAMDC provides for effective command and control of theater Army air and missile defense operations. The AAMDC's commander and staff expertise, small span of control, and ability to rapidly tailor forces are the critical elements of the organization's command and control advantages. The AAMDC is not just another ADA organization. It is a combined arms organization with the necessary manpower and expertise to plan,

coordinate, and assess all aspects of theater and missile defense operations. The AAMDC's small span of control provides an effective and efficient delineation of responsibilities between theater Army air and missile defense forces. Because the AAMDC commander commands all Army EAC ADA forces, the organization also provides for improved flexibility in the tailoring the right theater ADA force for mission requirements. These factors give the AAMDC organization a significant advantage over the EAC brigade alternative in the area of command and control.

The AAMDC also provides for effective theater air and missile defense planning. The organization is structured with the necessary personnel and expertise to proactively participate in theater planning processes. The AAMDC can effectively conduct parallel planning with the other joint force headquarters. The AAMDC staff is robust enough to simultaneously monitor current operations, anticipate changing battlefield conditions, and plan future operations. The headquarters' organization, structured around the operational elements of theater air and missile defense, ensure a comprehensive theater Army air and missile defense plan.

The AAMDC also provides for increased coordination capabilities. The AAMDC's extensive liaison and communications facilitates unity of effort in joint theater air and missile defense planning and execution. Liaison, supported with the necessary information and communication systems, ensure effective integration of Army air and missile defense operations with all other joint operations.

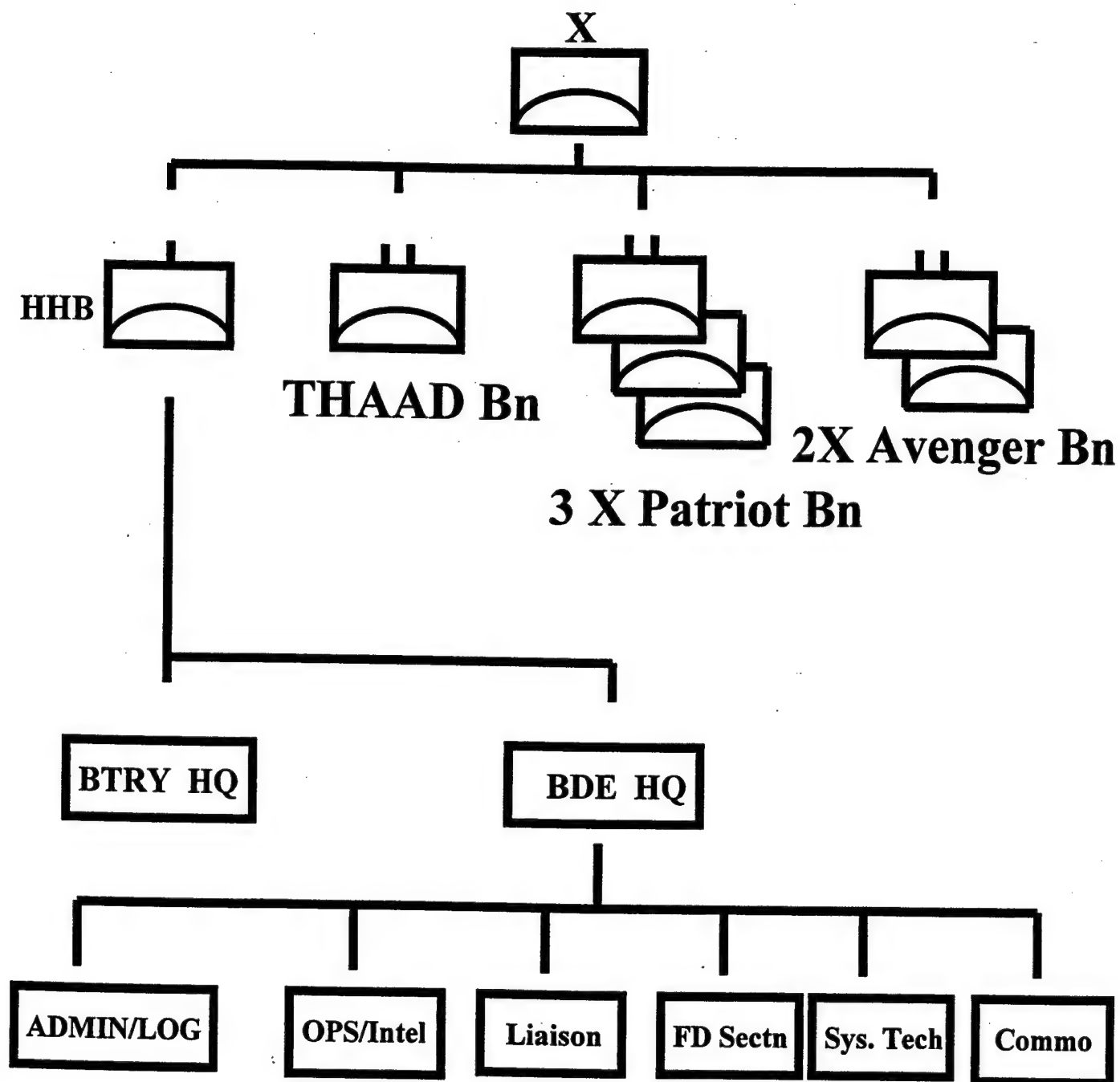
The AAMDC alternative is an acceptable allocation of resources. The enhanced capabilities of the AAMDC contribute to a more effective joint air and missile defense. The increased probability of air or missile attack against US forces or critical assets and

the potentially catastrophic consequences of such an attack provide further justification for the activation of the AAMDC.

The United States Army must not prepare for the last war. The Army must continually adapt to meet changing strategic conditions in order to be prepared for the next war. Although Army ADA was extremely successful in Operation Desert Storm, strategic conditions have changed since 1991. The activation of the AAMDC illustrates the US Army ADA Center is taking a proactive approach in preparing for the twenty-first century. The AAMDC is the best alternative for successful theater Army air and missile defense in a Force XXI environment.

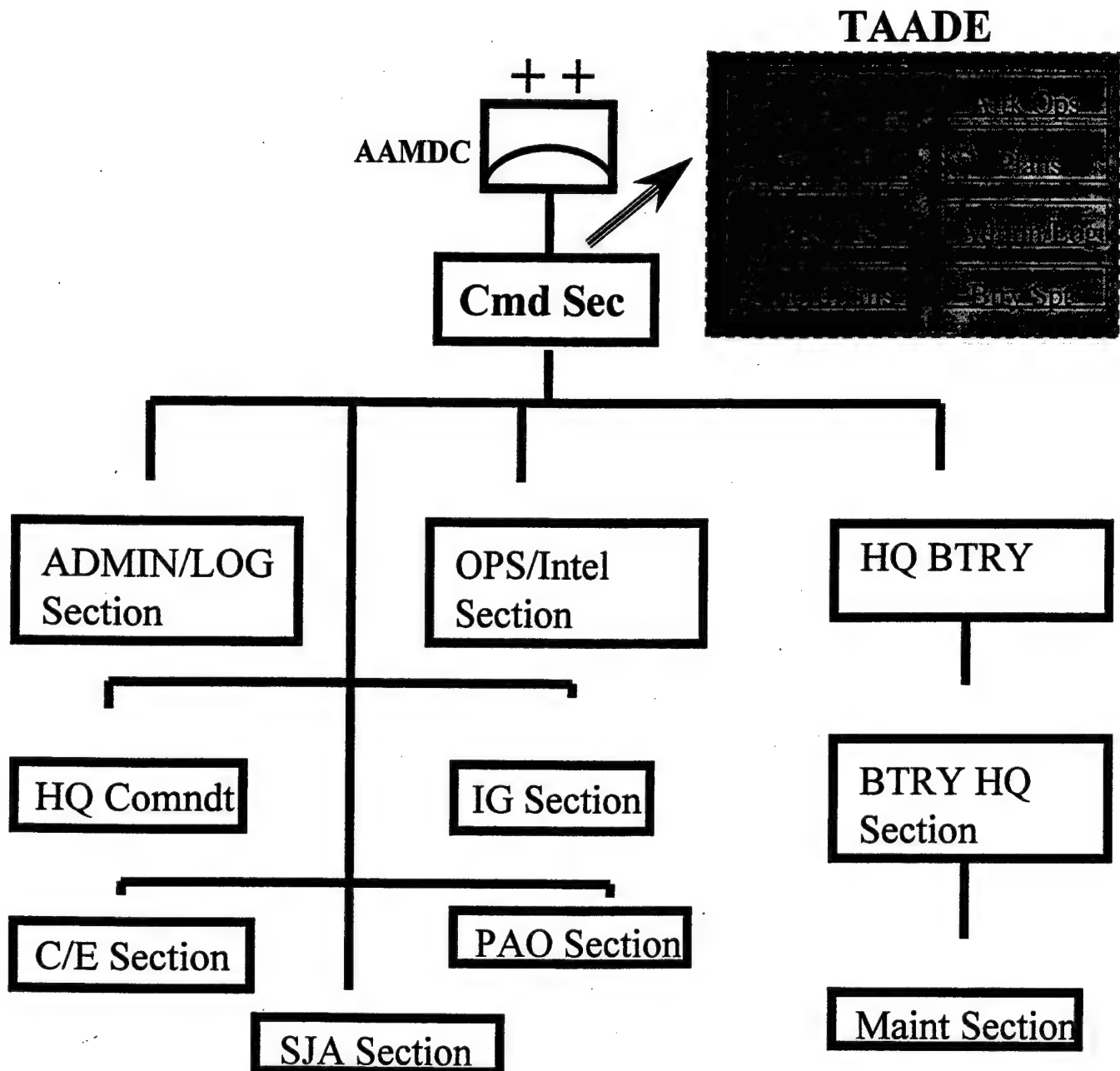
Appendix A: ADA Organizations

EAC ADA Brigade



Appendix A: ADA Organizations

32nd Army Air and Missile Defense Command



ENDNOTES

¹ Lieutenant Colonel Charles A. Anderson and Colonel (R) Richard G. Kurtz, "Who's In Charge?", ADA, July-August 1996, pp. 2-8.

² "Activation", ADA, Fall 1998. Current ADA magazines are published online. This article located at the following site: <http://147.71.210.21/fall98/activi.htm..>

³ Department of Defense, Conduct of the Persian Gulf War, (Washington D.C.: April 1992), p. 168.

⁴ U.S. Army Training and Doctrine Command, TRADOC Pamphlet 525-5, Force XXI Operations, (Fort Monroe, VA: August 1994), p. 1-2.

⁵ A National Security Strategy for a New Century, (Washington D.C.: The White House, October 1998), p. 1.

⁶ Ibid., p. 1-5.

⁷ Ibid., p. 4-5.

⁸ Ibid., p. 4-3.

⁹ U.S. Army, FM 44-100-2, Air Defense Artillery Reference Handbook, (Washington D.C.: HQDA, 1992), p. 2-1.

¹⁰ Joint Publication 3-01.5, Doctrine for Joint Theater Missile Defense, (Washington D.C.: US Government Printing Office, February 1996), p. II-5.

¹¹ Joint Publication 3-56.1, Command and Control for Joint Air Operations, (Washington D.C.: US Government Printing Office, November 1994), p. II-4.

¹² Joint Publication 3-01.5, p. x.

¹³ US Army, FM 100-7, Decisive Force: The Army in Theater Operations, (Washington D.C.: HQDA, May 1995), p. A-17.

¹⁴ Ibid., pp. A-17 and A-18. All ADCOORD responsibilities are paraphrased from this doctrinal source.

¹⁵ Ibid., p. A-18. Preposition of war reserve materiel stocks is a separate function in FM 100-7, but was included in the logistical responsibilities for brevity sake.

¹⁶ US Army, FM 44-71, Air Defense Artillery Brigade Operations, (Washington D.C.: HQDA, 1994), p. 3-25.

¹⁷ US Army, FM 44-100, US Army Air Defense Operations, (Washington D.C.: HQDA, June 1994), p. 5-3. Force operations are those functions required to plan, coordinate, plan for, and sustain the total air defense mission. Engagement operations include those functions required to execute the air, missile and countersurveillance battles.

¹⁸ FM 44-71, pp. A-13 to A-17. The EAC ADA brigade organization and responsibilities are paraphrased from this doctrinal manual.

¹⁹ Ibid., p. A-15.

²⁰ Ibid., p. A-16.

²¹ The Army ADA objective force structure consists of two AAMDCs. The two AAMDCs are the 32d AAMDC, an active component unit, and 263 AAMDC, a reserve component unit.

²² US Army, FM 44-94, Air and Missile Defense Command Operations (DRAFT), (Fort Bliss, Texas: US Army Air Defense Artillery School, August 1997), p 1-3. Doctrine for the new AAMDC has not been officially published, so the draft manual is the best source.

²³ Ibid., p. 1-8.

²⁴ 32nd Air and Missile Defense Command, "Ulchi Focus Lens Senior Leaders Conference", (Fort Bliss, Texas: 32nd AAMDC, 1999). Because there is no approved doctrine for the AAMDC, organizations and section responsibilities are paraphrased from this document and FM 44-94 (Draft).

²⁵ FM 44-94. p. 1-6.

²⁶ Joint Publication 3-0, Doctrine for Joint Operations, (Washington D.C.: US Government Printing Office, February 1995), p. II-16.

²⁷ US Army, FM 101-5-1, Operational Terms and Graphics, (Washington D.C.: HQDA, September 1997), p. 1-33.

²⁸ Ibid., p. 1-33.

²⁹ Martin van Crevald, Command in War, (Cambridge, MA: Harvard University Press, 1995), p. 6.

³⁰ FM 100-7, p. 5-16.

³¹ TRADOC Pamphlet 525-5, p. 3-1.

³² FM 100-7, p. 5-16.

³³ FM 44-100, p. 4-1.

³⁴ FM 101-5-1, p. 1-39.

³⁵ FM 44-100, p. 3-2.

³⁶ Ibid., p. 5-9.

³⁷ Ibid., p. 5-9.

³⁸ FM 44-100, p.3-6.

³⁹ Lieutenant Colonel (R) Michael E. Zaborowski, "Theater Missile Defense and the Deputy Area Air Defense Commander--- DAADC", Unpublished, 1999. LTC Zaborowski wrote this article based his extensive work with the AAMDC. He was assigned to the AAMDC prior to his retirement from active duty. He continues to work daily with the AAMDC as a civilian contractor for CAS, Inc. This article is awaiting publication in several military periodicals.

⁴⁰ Ibid.

⁴¹ Ibid.

⁴² The current AAMDC Chief of Staff is COL Barry Cardwell. He commanded an ADA battalion at Fort Hood and an ADA brigade at Fort Bliss.

⁴³ Joint Universal Lessons Learned, "Operation Desert Shield-Storm: ARCENT, Command Reports, 11th ADA BDE AAR" (Washington D.C.: HQDA, 1991). pp. 1-9. The Joint Universal Lessons Learned (JULLS) is a database of historical Army documents.

⁴⁴ Ibid., pp. 6-7.

⁴⁵ FM 44-94, p. A-2.

⁴⁶ Francis Fukuyama and Abram Schultsky, The Virtual Corporation and Army Organization, (Santa Monica, CA: Arroyo Center, RAND, 1997), p.19.

⁴⁷ Lieutenant Colonel (R) Michael E. Zaborowski, "Contractor Support on the Information Age Battlefield", Unpublished, 1999.

⁴⁸ From a 32nd AAMDC Information Briefing titled "AAMDC Roadshow #6/ CAS AM".

⁴⁹ FM 44-71, p. A-15. The EAC ADA brigade plan cell consists of only one officer, usually a captain.

⁵⁰ The 32nd AAMDC Information Briefing titled "Roadshow #6/ CAS AM". The briefing identifies 32nd AAMDC participation in joint exercises in most theaters. The 32nd AAMDC has participated in approximately fifteen exercise with USACOM, seven exercises with USPACCOM, six exercises with USCENTCOM, and three exercises with USEUCOM.

⁵¹ JULLS, p. 8.

⁵² 32nd AAMDC Information Briefing titled "AAMDC Roadshow #6/CAS- AM" and Zaborowski, "Theater Missile Defense and the Deputy Area Air Defense Commander--- DAADC".

⁵³ Zaborowski, "Theater Missile Defense and the Deputy Area Air Defense Commander--- DAADC".

⁵⁴ The AAMDC Information Briefing titled Roadshow #6/ AM- CAS.

⁵⁵ Ibid.

⁵⁶ "Pagers Provide Missile Warning", ARMY, June 1998, p. 58. Related information is also contained the 32nd AAMDC Roadshow #6 briefing.

⁵⁷ Ibid., p. 58.

⁵⁸ Ibid., p. 58.

⁵⁹ 32nd AAMDC Information Briefing titled Roadshow #6/CAS AM.

⁶⁰ FM 44-71, p. A-I.

⁶¹ FM 44-71, p. 2-8.

⁶² FM 44-71 repeatedly references either the AADCOM or AAMDC as the EAC brigade's higher headquarters.

⁶³ FM 44-71, p. A-15.

⁶⁴ 11th ADA Brigade served as a corps ADA headquarters and as the theater Army air defense headquarters.

⁶⁵ 32nd AAMDC Roadshow #6 briefing.

⁶⁶ Corporal Jeff Adams, "Exercise Showcases 21st Century ADA", ADA, January-February-March 1997, pp. 17-19.

⁶⁷ Charles L. McMurtrey III, "Patriot Games", ADA, October-December 1997, pp. 26-33.

⁶⁸ 32nd AAMDC Information Briefing titled "Roadshow #6/CAS AM".

BIBLIOGRAPHY

BOOKS

- Cesar, Edison M., "Strategies for Defining the Army's Objective Vision of Command and Control for the 21st Century." Santa Monica, CA: Arroyo Center, RAND, 1995.
- Coakley, Thomas P., Command and Control for War and Peace. Washington D.C.: National Defense University Press, 1992.
- Fukuyama, Francis, Shulsky, Abhram, 'The "Virtual Corporation" and Army Organization.' Santa Monica, CA: Arroyo Center, RAND, 1997.
- Gowing Mayilyn K., Kraft John D., Quick, James C. (Edited by), The New Organizational Headquarters, Washington, D.C.: American Psychological Association, 1998.
- Griffin, Gary B., The Directed Telescope. Fort Leavenworth, KS: Combat Studies Institute, United States Army Command and General Staff College, 1991.
- Herbst, Ph G., Alternatives to Hierarchies. OSLO, Leiden: Work Research Institute, 1976.
- Johnsen, William T., "Force Planning for Army XXI." Carlisle PA: Strategic Studies Institute, US Army War College, 1998.
- Macgregor, Douglas A., Breaking the Phalanx. West Port, CT: Preager Publishers, 1997.
- Rockwell, James M.(edited by), Tactical C3 for the Ground Forces. Washington D.C.: AFCEA International Press, 1986.
- Senge, Peter M., The Fifth Discipline. New York: Currency Doubleday, 990.
- Van Crevald, Martin, Command in War. Cambridge MA: Harvard University Press, 1985.

PERIODICALS

- "Activation", ADA, Fall 1998.
- Adams, Corporal Jeff, "Exercise Showcases 21st Century ADA." ADA, January-February-March 1997, pp. 17-19.
- Allard, Kenneth, "History, Technology, and the Structure of Command." Military Review, November 1981, pp.4-9.

- Anderson, Charles A. and Kurtz, Colonel (R) Richard G., "Who's In Charge?." ADA, July-August 1996, pp. 2-8.
- Braden, Lieutenant Colonel John W. Jr., Baerman, Major John V., "The TOC: Backbone of Command and Control." Military Review, November 1981, pp.31-43.
- Franks, General Frederick M. Jr., "Battle Command: A Commander's Perspective." Military Review, June 1996, pp. 4-25.
- Hahn, Daniel A., "Leadership: The Heart of C2." Military Review, November 1985, pp. 48- 51.
- Leser, Lieutenant Colonel Jeffrey W.S., "Battle Command- Vision for Success." Military Review, April 1997, pp. 52-59.
- Long, Major Dennis, "Command and Control- Restoring the Force." Military Review, November 1981, pp.44-47.
- McMahon, Major Timothy L., "The Key to Success: Developing a C2 Philosophy." Military Review, November 1985, pp. 42-44.
- McMurtrey, Captain Charles L. III, "Patriot Games." ADA, October-December 1997, pp. 26-33.
- Nifong, Lieutenant Colonel Michael R., "The Key to Information Dominance." Military Review, June 1996, pp. 62-67.
- "Paggers Provide Missile Warning." ARMY, June 1998, p. 58.
- Schmidt, Lieutenant Colonel Robert L., "A Doctrine for Command." Military Review, November 1985, pp. 45-47.
- Tankley, Major David M., "C2: Finding the Middle Ground." Military Review, November 1985, pp. 52-55.

MONOGRAPHS

- Braun, Major William G. III, Composite Warfare Commander (CWC): Implications for Force XXI Command and Control. Fort Leavenworth, KS: School of Advanced Military Studies, U.S. Army Command and General Staff College, December 1995.
- Hall, Major Russell, Battle Command: Tactical Decision-Making in the Information Age. Fort Leavenworth, KS: School of Advanced Military Studies, U.S. Army

Command and General Staff College, December 1996.

McGhee, Major Cornell T., Divisional Air Defense: The Shield of Blows. Fort Leavenworth, KS: December School of Advanced Military Studies, U.S. Army Command and General Staff College, December 1992.

GOVERNMENT DOCUMENTS AND MILITARY REFERENCES

America's Army of the 21st Century Force XXI Meeting the 21st Century Challenge. Washington D.C.: Department of the Army, January 1995.

Conduct of the Persian Gulf War. Washington D.C.: Department of Defense, April 1992.

C4I for the Warrior Global Command and Control System- From Concept to Reality. Washington D.C.: Department of Defense, 1994.

FM 44-71, Air Defense Artillery Brigade Operations. Washington D.C.: Headquarters, Department of the Army, 1994.

FM 44-94, Air and Missile Defense Command Operations (DRAFT), Fort Bliss, Texas: US Army Air Defense Artillery School, August 1997.

FM 44-100, US Army Air Defense Operations. Washington D.C.: Headquarters, Department of the Army, June 1995.

FM44-100-2, Air Defense Artillery Reference Handbook. Washington D.C.: Headquarters, Department of the Army, 1992.

FM 100-7, Decisive Force: The Army in Theater Operations. Washington D.C.: Headquarters, Department of the Army, May 1995.

FM 100-5, Operations. Washington D.C.: Headquarters, Department of the Army, June 1993.

FM 101-5, Staff Organization and Operations. Washington D.C.: Headquarters, Department of the Army, June 1997.

FM 101-5-1, Operational Terms and Graphics. Washington D.C.: Headquarters, Department of the Army, September 1997.

Joint Publication 3-0, Doctrine for Joint Operations. Washington D.C.: US Government Printing Office, February 1995.

Joint Publication 3-01.5, Doctrine for Joint Theater Missile Defense. Washington D.C.: US Government Printing Office, February 1996.

Joint Publication 3-56.1, Command and Control for Joint Air Operations. Washington D.C.: US Government Printing Office, November 1994.

TRADOC Pamphlet 525-5, Force XXI Operations. Fort Monroe, VA: U.S. Army Training and Doctrine Command, August 1994.

UNPUBLISHED MATERIAL

"Operation Desert Shield-Storm: ARCENT, Command Reports, 11th ADA BDE AAR." Washington D.C.: Joint Universal Lessons Learned, 1991.

Ulchi Focus Lens Senior Leaders Conference. Fort Bliss, Texas: 32nd Air and Missile Defense Command, 1999. Information briefing produced by 32nd AAMDC.

32nd AAMDC Roadshow #3/CAS. Fort Bliss, Texas: 32nd Air and Missile Defense Command, 1998. Information briefing produced by 32nd AAMDC.

32nd AAMDC Roadshow #6/CAS AM. Fort Bliss, Texas: 32nd Air and Missile Defense Command, 1999. Information briefing produced by 32nd AAMDC.

Zaborowski, Lieutenant Colonel (R) Michael E., "Theater Missile Defense and the Deputy Area Air Defense Commander---DAADC." Unpublished, 1999.

Zaborowski, Lieutenant Colonel (R) Michael E., "Contractor Support on the Information Age Battlefield." Unpublished, 1999.